## **CLAIMS**

## We Claim:

A method of trouble shooting a device in a digital electronic system,
comprising:

transmitting an external event trigger signal to a scan module to began a scan operation in the device;

transmitting a synchronous scan command signal to a device core in the device:

holding values contained in the plurality of flip-flops in the device core unchanged when the synchronous scan command signal is received by the device core; and

transmitting the values contained in the plurality of flip-flops to external test equipment when the synchronous scan command signal is received.

2. The method recited in claim 1, wherein the transmitting an external event trigger signal to a scan module to began a scan operation in the device, further comprises:

connecting the external test equipment to the external event trigger signal and a scan chain signal, wherein the external event trigger signal and the scan chain signal are embedded in a baseboard in which the device is connected.

3. The method recited in claim 2, wherein the transmitting the values contained in the plurality of flip-flops to external test equipment when the synchronous scan command signal is received, further comprises:

transmitting serially the values contained in the plurality of flip-flops to the external test equipment over the scan chain signal, wherein ordering the flip-flops is dependent upon the type of device being scanned.

4. The method recited in claim 3, further comprises:

receiving and the values contained in the plurality of flip-flops serially by the external test equipment;

storing the values contained in the plurality of flip-flops; and reporting to the user the values contained in the plurality of flip-flops by the external test equipment.

5. The method recited in claim 4, wherein holding values contained in the plurality of flip-flops in the device core unchanged when the synchronous scan command signal is received by the device core, further comprises:

synchronizing the plurality of flip-flops in the device core using a scan clock signal generated by the external test equipment.

**6.** The method recited in claim 5, further comprises:

controlling the transmission timing of the values contained by the plurality of flip-flops to the external test equipment based upon the scan clock signal.

- 7. The method recited in claim 6, wherein the device comprises a processor, memory controller, USB interface, SCSI interface, or communications interface.
- 8. A computer program embodied on a computer readable medium and executable by a computer for trouble shooting a device in a computer system, comprising:

transmitting an external event trigger signal to a scan module to began a scan operation in the device;

transmitting a synchronous scan command signal to a device core in the device;

holding values contained in the plurality of flip-flops in the device core unchanged when the synchronous scan command signal is received by the device core; and

transmitting the values contained in the plurality of flip-flops to external test equipment when the synchronous scan command signal is received.

9. The computer program recited in claim 8, wherein the transmitting an external event trigger signal to a scan module to began a scan operation in the device, further comprises:

connecting the external test equipment to the external event trigger signal and a scan chain signal, wherein the external event trigger signal and the scan chain signal are embedded in a baseboard in which the device is connected.

10. The computer program recited in claim 9, wherein the transmitting the values contained in the plurality of flip-flops to external test equipment when the synchronous scan command signal is received, further comprises:

transmitting serially the values contained in the plurality of flip-flops to the external test equipment over the scan chain signal, wherein ordering the flip-flops is dependent upon the type of device being scanned.

11. The computer program recited in claim 10, further comprises:

receiving and the values contained in the plurality of flip-flops serially by the external test equipment;

storing the values contained in the plurality of flip-flops; and reporting to the user the values contained in the plurality of flip-flops by the external test equipment.

12. The computer program recited in claim 11, wherein holding values contained in the plurality of flip-flops in the device core unchanged when the synchronous scan command signal is received by the device core, further comprises:

synchronizing the plurality of flip-flops in the device core using a scan clock signal generated by the external test equipment.

- 13. The computer program recited in claim 12, further comprises: controlling the transmission timing of the values contained by the plurality of flip-flops to the external test equipment based upon the scan clock signal.
- 14. The computer program recited in claim 13, wherein the device comprises a processor, memory controller, USB interface, SCSI interface, or communications interface.
- **15.** An apparatus to retrieve contents of a plurality of flip-flops contained within a device in a digital electronic system, comprising:

an external test equipment to transmit an external event trigger signal and receive the contents of the plurality of flip-flops;

a scan module embedded in the device and connected to the external test equipment to receive the external event trigger signal and transmit the contents of the plurality of flip-flops when the external event trigger signal is set on, wherein the external event trigger signal is embedded in a baseboard in which the device is attached to.

**16.** The apparatus recited in claim 15, further comprising:

a scan chain signal to connect the device to the external test equipment, wherein the contents of the plurality of flip-flops is transmitted to the external test equipment from the device over the scan chain signal in a serial manner.

17. The apparatus recited in claim 16, further comprising:

a scan clock signal generated by the external test equipment and connected to the device to synchronize the transmission of the contents of the proud to flip-flops over the scan chain signal.

18. The apparatus recited in claim 17, wherein the scan module further comprises

a synchronous scan command module to generate a synchronous scan command signal to a device core contained within the device and having the plurality of flip-flops contained in the device core, wherein when the synchronous scan command signal is received the contents of the plurality of flip-flops is held constant.

- 19. The apparatus recited in claim 18, wherein when the synchronous scan command signal is received by the device core operations of the device are halted
- **20.** The apparatus recited in claim 19, wherein the external test equipment will store and display the contents of the flip-flops upon receipt from the device.
- 21. The apparatus recited in claim a 20, wherein the wherein the device comprises a processor, memory controller, USB interface, SCSI interface, or communications interface.